**Chapter 8- cost curves**

**Short Run v. Long Run**

**Short Run- Fixed and Variable Costs**

**All businesses operate in the short run-**

**Because Fixed Costs (normally plant size) exists, increasing inputs will lead to specialization and efficiency gains resulting in per unit cost declines..**

**-HOWEVER—SINCE THE PLANT SIZE CAN’T INCREASE—AT SOME POINT EFFICIENCY PER UNIT OF INPUT WILL BEGIN TO DECLINE (CONSTRAINT) and result in increasing costs per unit of input---LAW OF DIMINISHING RETURNS**

**Law of diminishing returns**

**e.g.- 1st units of labor will be more efficient than the 2nd unit because the advantages of increasing specialization make both units of labor more productive—marginal product of labor—MPL increases**

**LDR- At some point –perhaps—5th unit of labor –specialization may continue however the advantages of specialization will be increasingly less significant---at the same time—the disadvantages of people getting in each other’s way will increase…As a result, new units of labor will not be able as productive as the other ones. Marginal Product of Labor decreases.**

**ONCE LDR SETS IN—IT GETS WORSE AND WORSE—8TH UNIT WORSE THAN 7TH, 9TH UNIT WORSE THAN 8TH, 10TH UNIT WORSE THAN 9TH**

**Averages always follow the marginal---Your average includes all prior scores—if the scores go down your average goes down, if the scores go up your average goes up. Since MPL initially goes up—Apl goes up as well (so long as MPl>APl). When MPl then = APl, APl peaks. As MPl lies below APl (MPl<APl) ---APl declines though at a slower pace since it includes all those prior units of production and labor.**

**Once MPl falls it continues to fall. This process can only change if you change your plant size---then you’re in another short run—all new curves.**

**APL PEAKS AFTER IT INTERSECTS THE MPL then it too declines**

**TP increases at a fast rate if MPl increasing, slow rate if MPl is declining. So long as MPl is positive, TP rises. Slope of the TP= MPl for that unit of labor.**

**LESSON 2**

**$$$$$$$$$$$$$$$-Moving away from product per unit of input to Cost per unit- I’m more interested in how much each additional unit of product cost than how much product each unit of labor produces since ultimately I care about $$$ and Cents!**

**ALL INPUTS OF THE SAME ILK—IE LABOR COST THE SAME—NO ADVANTAGE TO BUYING IN BULK**

**If labor unit are $10- all inputs are the same cost—THIS ISN’T THE REAL WORLD WHERE BUYING IN BULK MAY SAVE YOU MONEY**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Units Labor** | **Total Product** | **Marginal Product** | **APl** | **Marginal Cost** | **Average Variable Cost TVC/Output** |
| **1 ($10)** | **3** | **3** | **3** | **3.33** | **10/3--3.33** |
| **2 ($10)** | **10** | **7** | **5** | **1.4** | **$20/ 10 --2** |
| **3 ($10)** | **20** | **10** | **20/3-6.66** | **1** | **$30/20—1.5** |
| **4 ($10)** | **26** | **6** | **26/4 -6.5** | **1.66** | **$40/26—1.53** |
| **5 ($10)** | **30** | **4** | **30/5- 6** | **2.5** | **$50/30-1.66** |
| **6 ($10)** | **31** | **1** | **5.16** | **10** | **$60/31-1.95** |

**Fixed Costs (also known as sunk costs) do not vary w/output, as output increases,**

**Average Fixed Costs FC/Q decrease-**

**Fixed Costs will also be a smaller and smaller proportion of Total Cost and therefore ATC**

**Marginal Costs- increase in cost to make one more unit**

**Initially declines than at the point of *diminishing returns* (DR), increases, once it increases it will continue to increase (U shaped)**

**Average Variable Costs- TVC/Q**

**C/Q- is dependent upon Marginal Costs- if MC<AVC, AVC declines, if MC>AVC, AVC increases—since MC goes down initially so does AVC, since after DMR, MC will only go up, AVC will continue to go down—UNTIL MC>AVC at which point AVC rises**

**Average Total Cost= TC/Q**

**Like AVC if MC<ATC, ATC declines, if MC>ATC, ATC rises. The difference between AVC and ATC is AFC, therefore as AFC comes closer to the x-axis, the gap btw ATC and AVC decreases.**

**TC curve-**

**TC curve will initially rise at a progressively slower rate (flatter) reflecting greater efficiency until---DMR at which point it will rise more steeply reflecting the higher Marginal Costs. The slope of the TC curve=MC**

**TVC- same as TC Curve, same slope, only difference is the distance btw. TVC and TC is Fixed Cost**

**Fixed Cost- Straight, horizontal line**